

6-4 Practice

Form K

Solve each word problem.

1. The concession stand is selling hot dogs and hamburgers during a game. At halftime, they sold a total of 78 hot dogs and hamburgers and brought in \$105.50. How many of each item did they sell if hamburgers sold for \$1.50 and hot dogs sold for \$1.25?

$$46 = D = \text{HOT DOGS}$$

$$32 = B = \text{BURGERS}$$

$$D + B = 78 \Rightarrow B = 78 - D$$

$$1.50B + 1.25D = 105.50$$

$$B = 78 - 46$$

$$1.50(78 - D) + 1.25D = 105.50$$

$$B = 32$$

$$117 - 1.50D + 1.25D = 105.50$$

$$-.25D = -11.5 \quad D = 46$$

2. The sum of two numbers is 67. The smaller number is 3 less than the larger number. What are the two numbers?

$$32 = \text{Small}$$

$$35 = \text{Large}$$

$$S + L = 67$$

$$S = L - 3$$

$$(L - 3) + L = 67$$

$$2L - 3 = 67$$

$$+3 \quad +3$$

$$2L = 70$$

$$L = 35$$

3. There are two different jobs Jordan is considering. The first job will pay her \$4200 per month plus an annual bonus of \$4500. The second job pays \$3100 per month plus \$600 per month toward her rent and an annual bonus of \$500. Which job should she take?

$$\begin{aligned} \rightarrow \text{Job}_1 &\Rightarrow \text{YEARLY AMOUNT} = 12(4200) + 4500 \\ &= 50,400 + 4500 \\ &= 54,900 \end{aligned}$$

$$\begin{aligned} \text{Job}_2 &\Rightarrow \text{annual amount} = 12(3100 + 600) + 500 \\ &= 12(3700) + 500 \\ &= 44,900 \end{aligned}$$

4. The perimeter of a rectangle is 66 cm and its width is half its length. What are the length and the width of the rectangle?

$$W = 11 \text{ cm} \quad 2W + 2L = 66 \text{ cm}$$

$$L = 22 \text{ cm}$$

$$W = \frac{L}{2}$$

$$2\left(\frac{L}{2}\right) + 2L = 66$$

$$3L = 66$$

$$L = 22$$

6-4

Practice (continued)

Form K

5. A community sponsored a charity square dance where admission was \$3 for adults and \$1.50 for children. If 168 people attended the dance and the money raised was \$432, how many adults and how many children attended the dance?

- a. What are the two systems of equations that you could write to solve this problem?

A = ADULTS

C = CHILDREN

$$A + C = 168$$

$$\Rightarrow A = 168 - C$$

$$3A + 1.5C = 432$$

$$3(168 - C) + 1.5C = 432$$

$$504 - 3C + 1.5C = 432$$

$$-1.5C = -72$$

$$C = 48$$

- b. What method would you use to solve the system? Why?

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- c. How many adults and how many children attended the dance?

48 CHILDREN

120 ADULTS

$$A = 168 - 48$$

$$A = 120$$

Solve each system. Explain why you chose the method you used.

$$\begin{array}{l} 2(3y = 4x + 1) \Rightarrow 6y = 8x + 2 \\ (2, 3) \quad 8x - 2y = 10 \quad 6y - 8x = 2 \\ \quad 8x - 2(3) = 10 \quad 6y - 8x = 2 \\ \quad 8x - 6 = 10 \quad -2y + 8x = 10 \\ \quad 8x = 16 \quad x = 2 \quad 4y = 12 \\ \quad \quad \quad \quad y = 3 \end{array}$$

$$\begin{array}{l} 8. \quad 3x - 3y = -3 \\ \quad -(-2x - 3y = 17) \\ (-4, -3) \quad 5x = -20 \quad x = -4 \\ \quad -2(-4) - 3y = 17 \\ \quad 8 - 3y = 17 \\ \quad -3y = 9 \\ \quad y = -3 \end{array}$$

$$\begin{array}{l} 7. \quad -2y = -4x - 2 \Rightarrow 4x - 2y = -2 \\ \quad 3x + 2y = 9 \\ (1, 3) \quad + \quad 3x + 2y = 9 \\ \quad \quad \quad 7x = 7 \\ \quad \quad \quad x = 1 \end{array}$$

$$\begin{array}{l} 9. \quad x - 2y = 9 \\ \quad -(x + 3y = -1) \\ (5, -2) \quad -5y = 10 \\ \quad \quad \quad y = -2 \\ \quad x - 2(-2) = 9 \\ \quad x + 4 = 9 \\ \quad x = 5 \end{array}$$

10. A student invested \$5000 in two different savings accounts. The first account pays an annual interest rate of 3%. The second account pays an annual interest rate of 4%. At the end of one year, she had earned \$185 in interest. How much money did she invest in each account?

$$1500 = \text{ACCOUNT A} - 3\%$$

$$3500 = \text{ACCOUNT B} - 4\%$$

$$A + B = 5000 \Rightarrow A = 5000 - B$$

$$.03A + .04B = 185$$

$$.03(5000 - B) + .04B = 185$$

$$150 - .03B + .04B = 185$$

$$-150 \quad -150$$

$$.01B = 35$$

$$B = 3500$$